

No. 815,361.

PATENTED MAR. 20, 1906.

G. MARSHALL & J. COX.

DRAFT EQUALIZER.

APPLICATION FILED JUNE 13, 1905.

Fig. 1.

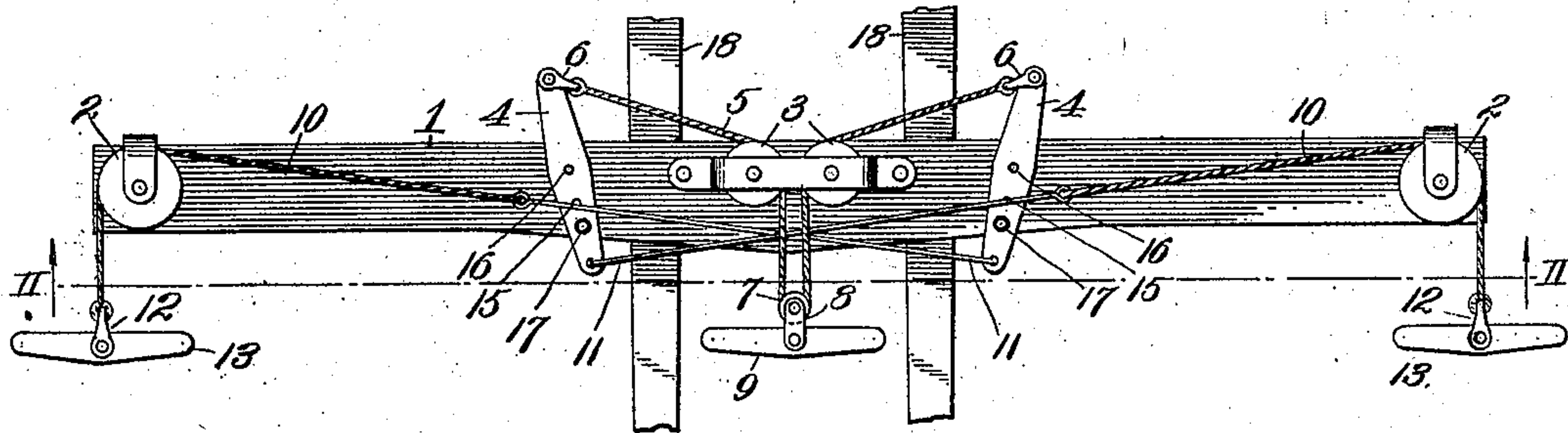


Fig. 2.

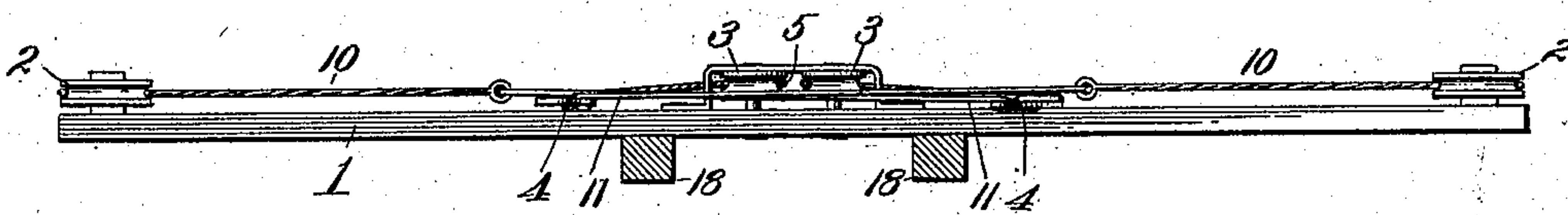


Fig. 3.

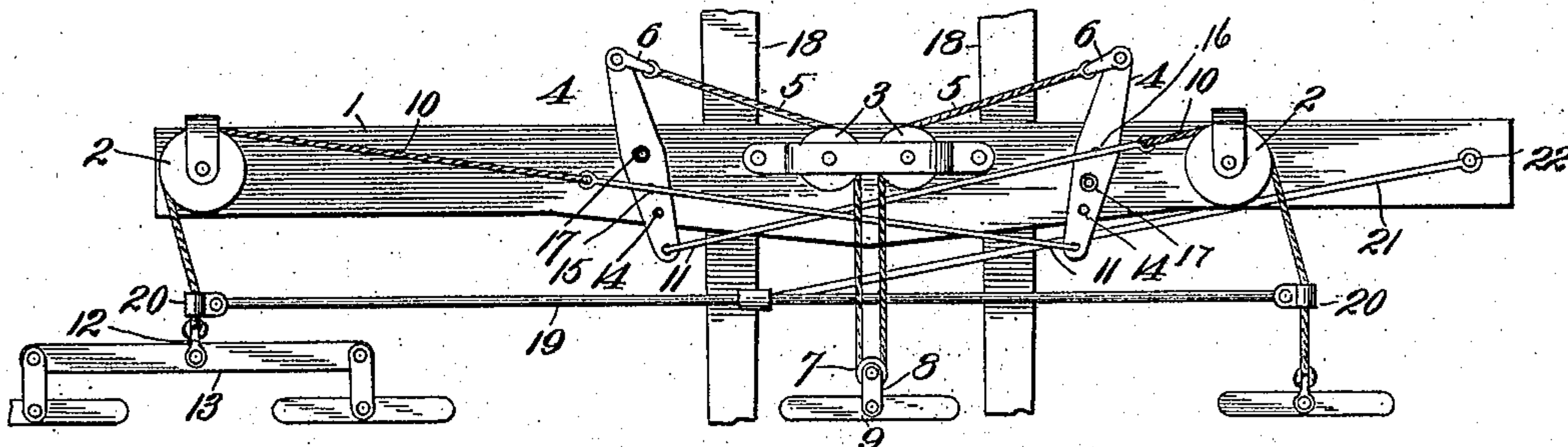
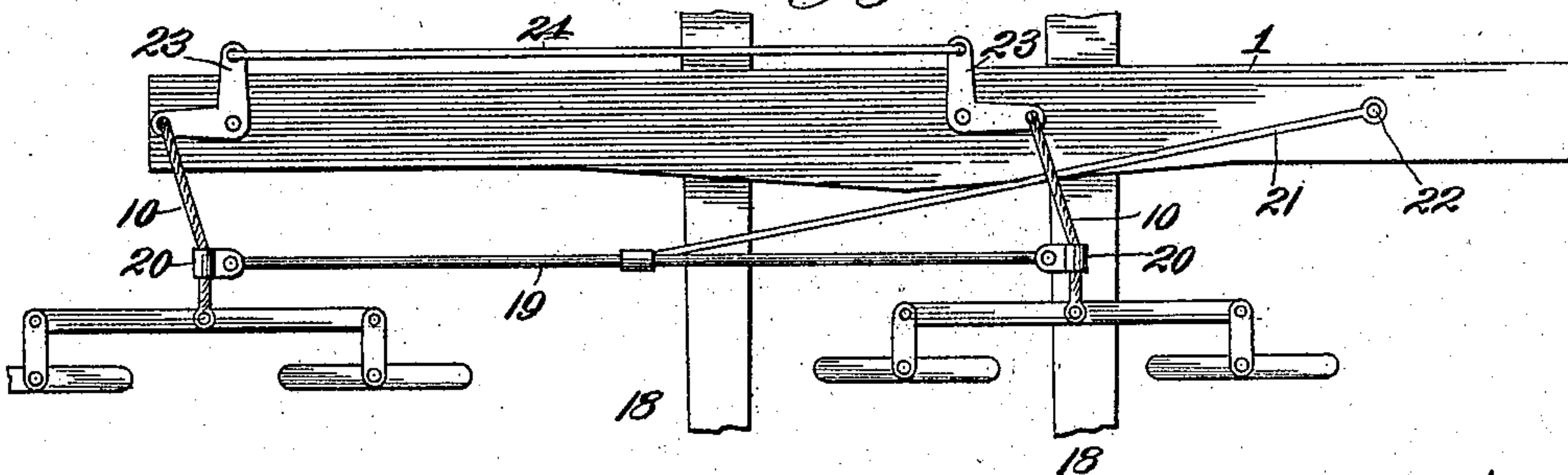


Fig. 4.



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# UNITED STATES PATENT OFFICE.

GEORGE MARSHALL AND JOHN COX, OF TARKIO, MISSOURI.

## DRAFT-EQUALIZER.

No. 815,361.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed June 13, 1905. Serial No. 265,112.

*To all whom it may concern:*

Be it known that we, GEORGE MARSHALL and JOHN COX, citizens of the United States, residing at Tarkio, in the county of Atchison and State of Missouri, have invented certain new and useful Improvements in Draft-Eveners, of which the following is a specification.

Our invention relates to draft-eveners; and our object is to produce a device of this character adjustable to accommodate any number of horses, which distributes the draft equally, and is applicable to two-row cultivators, binders, disk plows, road-graders, and a great variety of other machines.

A further object is to produce means for eliminating side draft on the machines with which the evener is employed.

With these general objects in view the invention consists in certain novel and peculiar features of construction and organization, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a plan view of the evener as adapted for use with five horses, one in the middle and two at each end. Fig. 2 is a section on the line II II of Fig. 1. Fig. 3 is a plan view with the evener adapted for use with four horses, one between the tongues of a two-row cultivator, for instance, one at one side of and near said tongues, and two at the opposite side of and remote from said tongues, said figure also showing our attachment for eliminating side draft. Fig. 4 is a top plan view of a modified type of four-horse evener equipped with a side-draft attachment.

Referring to the drawings in detail, 1 indicates a bar of any suitable length adapted to be secured to the machine with which it is used. 2 indicates guide-sheaves carried by said bar, and 3 guide-sheaves also carried by the bar between the guide-sheaves 2.

4 indicates levers mounted on the bar, and 5 a doubled cable or chain extending between and engaging sheaves 3 and secured at its rear ends to said levers by swiveled clips 6 and extending around a guide-sheave 7 forward of the bar, said guide-sheave being preferably mounted in a clip 8, swiveled to the center of a swingletree 9.

10 indicates cables or chains engaging the sheaves 2 and each connected at its rear end to the front end of the most remote lever forward of its pivotal point, said connection

being preferably through the medium of rods 11. The opposite or front end of said cables or chains have swiveled connections, as at 12, with the doubletrees 13.

Each lever is provided with holes 14, 15, and 16, holes 14 engaging bolts 17, secured to the bar, when the device is used as a five-horse evener, said holes 14 being disposed one-fifth of the distance between the pivotal connections of rods 11 and clips 6 with the levers, so that the leverage of the single horse is four times that of the other four horses.

If it is desired to employ six horses, swingletree 9 will be replaced by a doubletree (not shown) and the pivot-bolts 17 will engage the holes 15 of the levers, so that the leverage of the two middle horses will be double that of the four outer horses. If swingletrees alone be employed and the pivot-bolts engage holes 15 of the levers, the device is transformed into a three-horse evener, because the middle horse will have double the leverage of the outer horses. If it be desired to employ four horses, two in the middle and one at each end, swingletrees will be employed at the ends and a doubletree at the middle, and the pivot-bolts will engage the central holes 16 of the levers, so that the leverage of the outer horses is the same as that of the inner pair. It is obvious from the foregoing that by the provision of other holes in the levers at the proper points and the engagement of the pivot-bolts with certain of said holes the device may be used with additional horses and the leverage be equalized.

In Fig. 1 the bar is disposed centrally with respect to the tongues 18 of a two-row cultivator or other machine, and it is to be understood that it may be either rigidly or pivotally carried thereby, provided the pivotal point of support is at the center of the bar. If it is not at the center of the bar, then an attachment, hereinafter described, for eliminating side draft may be employed to equalize the leverage.

For two-row cultivators, which as generally made should be drawn by at least four draft-animals, but which are usually hitched to three draft-animals because of the non-existence of a practical four-horse evener, we assemble the parts of the evener as follows—that is to say, we journal one of the sheaves 2 at substantially the point shown in Fig. 3, the remaining connections being arranged as shown in said figure—that is, at the front end



of the cable engaging the sheave 2 nearest sheaves 3 a swingletree is provided, while a doubletree is attached to the front end of the corresponding cable, so that one horse is disposed between the tongues, a second horse at one side of the tongues, and two horses at the opposite side of the tongues. In this case also the right-hand bolt 17 is engaged with a hole 15 of the corresponding lever, while the left-hand bolt 17 is engaged with a hole 16 of the corresponding lever. By this arrangement the leverage is equalized on all of the horses; but in view of the fact that the left-hand sheave 2 is a greater distance from sheaves 3 than the right-hand sheave 2 it is obvious that in operation the attached machine would be swung at an angle to the line of draft. To overcome this difficulty, we provide an attachment constructed as follows: 19 is a transversely-extending bar connected at its ends, as at 20, to cables 10 forward of bar 1, and 21 is a connection in the form of a rod, chain, or cable extending obliquely from bar 1, to which it is attached, as at 22, at a point to the right of the right-hand sheave 2 to the rod 19, the length of said connection 21 being such that when the cables 10 are taut their outer ends swing to the right, as shown, so that when the machine is being drawn forward a tensile strain will be imposed on connection 21 by the draft-animals, so as to throw the draft on the right-hand side of the bar, which counteracts the tendency of the attached machine to swing at an angle to the line of draft, as hereinbefore referred to.

In Fig. 4 we show a modified type of construction of the four-horse evener. In this construction instead of sheaves 2 we employ bell-crank levers 23 and connect the rearwardly-projecting arms of said levers at 24, said connection being flexible or not, as desired. To the outer arms of said levers are attached the connections 10. If in this construction the bell-crank levers are arranged equal distances from the center of draft, no side-draft attachment need be employed; but where one lever is nearer the center of draft than the other, as shown, the greater leverage on the horse most remote from said line of draft may be counteracted by the employment of the side-draft attachment constructed and arranged as hereinbefore described.

In all of the constructions described it will be apparent that most of the draft is imposed on the central portion of bar 1, and consequently that said bar need not be as heavy as would otherwise be required. Because of such imposition of the draft the evener possesses the desirable features of lightness as well as strength and simplicity and durability of construction.

It will be understood, of course, that in any of the structures bell-crank levers can be substituted for the guide-sheaves 2 and 3 and that the use of the sheaves 7 permits the dou-

bled connecting-rope 5 to move with but little friction to accommodate the constantly-changing positions of the levers.

Having thus described the invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A draft-evener, comprising a bar, a pair of levers mounted on said bar, a hitching device forward of the bar and between said levers, a flexible connection between said hitching device and one end of each lever, and suitably guided so as to maintain a position for swinging said levers or being moved endwise by the latter, a pair of hitching devices forward of the bar and at opposite sides of the first-named hitching device, and connections suitably guided between said last-named hitching device and said levers, at the opposite sides of their pivotal points from their connection with the first-named hitching device.

2. A draft-evener, comprising a bar, a pair of levers mounted on said bar, a hitching device forward of the bar and between said levers, a flexible connection between said hitching device and one end of each lever, and suitably guided so as to maintain a position for swinging said levers or being moved endwise by the latter, a pair of hitching devices forward of the bar and at opposite sides of the first-named hitching device, connections suitably guided between said last-named hitching device and said levers at the opposite sides of their pivotal points from their connection with the first-named hitching device, and means for eliminating side draft.

3. A draft-evener, comprising a bar, a pair of levers mounted on said bar, a hitching device forward of the bar and between said levers, a flexible connection between said hitching device and one end of each lever, and suitably guided so as to maintain a position for swinging said levers or being moved endwise by the latter, a pair of hitching devices forward of the bar and at opposite sides of the first-named hitching device, connections suitably guided between said last-named hitching device and said levers at the opposite sides of their pivotal points from their connection with the first-named hitching device, and a side-draft attachment comprising a connection between the connections attached to the last-named hitching device, and an oblique connection between the last-named connection and the bar outward of one of the outer hitching devices.

4. A draft-evener, comprising a bar, a pair of levers mounted on said bar, a hitching device forward of the bar and between said levers, a doubled flexible connection having a sliding engagement with said hitching device at its looped end and its rear ends attached to said levers rearward of their pivotal points, guides for said flexible connections between



said levers, guides mounted on the bar outward of the levers, flexible connections engaging said guides and each connected at its rear end to the front end of the most remote lever, and hitching devices attached to the front ends of said last-named flexible connections.

5. A draft-evenner, comprising a bar, a pair of levers mounted on said bar, a hitching device forward of the bar and between said levers, a doubled flexible connection having a sliding engagement with said hitching device at its looped end and at its rear ends attached to said levers rearward of their pivotal points, guide-sheaves mounted on the bar at opposite sides of and engaging said flexible connections, and guide-sheaves mounted on the bar outward of said levers, flexible connections engaging said guide-sheaves and each connected at its rear end to the front end of the most remote lever, and hitching devices attached to the front ends of said last-named flexible connections.

6. A draft-evenner, comprising a bar, a pair of levers mounted on said bar, a hitching device forward of the bar and between said levers, a doubled flexible connection having a sliding engagement with said hitching device at its looped end and at its rear ends attached to said levers rearward of their pivotal points, guide-sheaves mounted on the bar at opposite sides of and engaging said flexible con-

nections, guide-sheaves mounted on the bar outward of said levers, flexible connections engaging said guide-sheaves and each connected at its rear end to the front end of the most remote lever, hitching devices attached to the front ends of said last-named flexible connections, a transversely-extending bar connecting the last-named flexible connection forward of the first-named bar, and a connection between said connecting-bar and the first-named bar, the point of union of the latter being outward of the contiguous guide-sheave.

7. The combination with an evenner comprising a bar provided with hitching devices in front of and flexibly connected to said bar, a transverse connection between and movable laterally of the machine with said hitching device, and an obliquely-extending connection between said connecting-bar and the first-named bar, the point of connection of said obliquely-extending connection with the first-named bar being outward of the contiguous hitching device.

In testimony whereof we affix our signatures in the presence of two witnesses.

GEORGE MARSHALL.  
JOHN COX.

Witnesses:

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